

## ABSTRACT OF THE DISCLOSURE

A robust two spectral band radiometer for long-term stand-alone spectral radiance measurements in the field is provided. The instrument can be used to monitor various surface parameters over prolonged periods of time by automatically collecting spectral radiance measurements at a user selected time interval (minutes to days). Two main applications are the monitoring of water surface parameters, such as total SSC and turbidity, and on-land vegetation by collecting spectral radiance measurements in a broad visible red and near-infrared spectral bands. Use for other application is possible using different spectral bands and multiple radiometers. Also included is the use of a ratioing technique to correlate the spectral radiance values rather than spectral reflectance values to the surface parameters of interest; this simplifies both the field instrumentation requirements and post processing procedures.